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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/471,497	12/23/1999	ISAO MIHARA	0039-7495-2S	7481

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ALEXANDRIA, VA 22314

EXAMINER

BHATNAGAR, ANAND P

ART UNIT	PAPER NUMBER
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2623

DATE MAILED: 02/09/2004

13

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/471,497

Applicant(s)

MIHARA ET AL.

Examiner

Anand Bhatnagar

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4,7,9,16,23,27 and 29-37 is/are pending in the application.
- 4a) Of the above claim(s) 4, 7, 16, and 23 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,9,27 and 29-37 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

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Response to Arguments

1. Applicant's response filed on 01/08/04 (paper # 12) has been entered and made of record.
2. Claims 2, 3, 5, 6, 8, 10-15, 17-22, and 24-28 have been previously canceled. Claims 4, 7, 16, and 23 were previously withdrawn as they pertain to nonelected species. Currently claims 1, 4, 7, 9, 16, 23, 27, and 29-37 are pending.
3. Examiner withdraws the 35 USC 112, 1st paragraph, rejection for claims 30, 33, and 36 since applicant's representative has shown that there is support for the claimed limitations in the specifications.
4. Applicant's arguments with respect to claims 1, 7, and 9 have been considered but are moot in view of the new ground(s) of rejection. Examiner refers to the rejection below.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 1, 9, and 27 are rejected under 35 U.S.C. 102(b) as being anticipated by Wan et al. ("Neural Networks for 3D Motion Detection From a Sequence of Image Frames," Computer Science Dept., The Chinese University of Hong Kong, IEEE, 1991).

Regarding claims 1 and 9: An image recognition method (Wan et al.; abstract, where the object is identified and it's motion determined) comprising:

obtaining a deformed image by three-dimensionally deforming a captured range image having three-dimensional information including depth information of an object to be sensed (Wan et al.; Abstract, page 2013 last two paragraphs, page 2016 top half of page. Wherein 3D motion of an object is determined by comparing data between a current frame and a previous frame. In order to determine the objects 3D motion parameter the image(s) undergo normalization which is a process wherein any size image is transformed into a fixed size image. Following this transformation then frame to frame (current frame to previous frame) comparison is performed in order to determine the 3D motion of the object. The transformation of image size to a fixed image size is seen as deforming an image since the parameters of an image and the object within the image are changed. The sequence of images of the 3D object are read as range images.); and

recognizing three-dimensional motion of an object in the range image by comparing the obtained three-dimensionally deformed image with a newly captured range image (Wan et al.; Abstract, page 2013 last two paragraphs,

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page 2016 top half of page, wherein a current frame and a previous frame are compared to determine the 3D motion of an object in a sequence of images).

Regarding claim 27: It is rejected for the same reason as claims 1 and 9 above and for the following limitation of: a computer readable program code and an image capture device (Wan et al.; It is inherent that this method is performed by a computer since it is a neural network system and the sequence of images obtained is inherently obtained from some type of an image capture device).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 29-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wan et al. ("Neural Networks for 3D Motion Detection From a Sequence of Image Frames," Computer Science Dept., The Chinese University of Hong Kong, IEEE, 1991) and in view of Bradski (Computer Vision Face Tracking for use in a perceptual user Interface, Gary R. Bradski, Microcomputer Research Lab, Santa Clara, CA., Intel Corporation, Second Quarter 1998).

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Regarding claims 29, 32, and 35: An image recognition apparatus wherein the deformed image is a rotated deformed image.

Wan et al. discloses to recognize 3D motion within a within a sequence of video images by transforming the size of the images (read as deforming the images). Wan et al. does not teach where the deformed image is due to a rotated deformed image. Bradski teaches to determine 3D motion of a rotated image (Bradski; fig. 8 where the object is rotated and images taken of the deformed/rotated object followed by motion being tracked from one frame to another). It would have been obvious to one skilled in the art to combine Bradski to Wan et al. because they are analogous in determining motion in a sequence of video images. One in the art would have been motivated to incorporate the teaching of Bradski to that of Wan et al. in order to have the ability for a computer to track, understand the pose, gestures, and emotional expressions of humans/objects (Bradski; page 1 left column bottom paragraph).

Regarding claims 31, 34, and 37: Bradski further teaches an image recognition apparatus wherein the deformed image is a contracted by rotation (Bradski; page 6 right column top paragraph, where the image is scaled and translated, where the scaling is read as expansion/contraction and translation as rotation).

Regarding claims 30, 33, and 36: Bradski further teaches an image recognition method wherein the deformed image is moved in parallel (Bradski;

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page 6 right column top paragraph, where the image is scaled and translated, where the translation is read as parallel motion).

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Sumi et al. (U.S. patent 5,845,006) for frame to frame comparison to obtain object position and attitude.

Contact Information

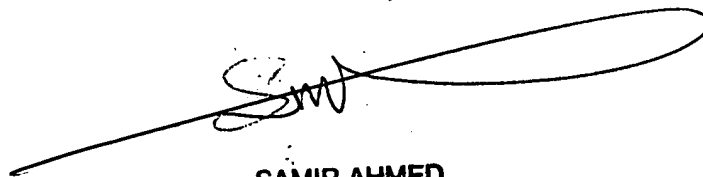
8. Any inquiry into this communication should be directed to Anand Bhatnagar whose telephone number is 703-306-5914, whose supervisor is Amelia Au whose number is 703-308-6604, group receptionist is 703-305-4700, and group fax is 703-872-9306.

AB

Anand Bhatnagar

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February 2, 2004



**SAMIR AHMED
PRIMARY EXAMINER**